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## **Life satisfaction and burnout among heart, lung, liver, and kidney transplant patients and their spouses**

Goetzmann, Lutz ; Scholz, Urte ; Dux, Raphaela ; Roellin, Michaela ; Boehler, Annette ; Muellhaupt, Beat ; Noll, Georg ; Wüthrich, Rudolf P ; Klaghofer, Richard

**Abstract:** Objective: While a number of studies have dealt with the psychosocial consequences of transplantation for patients, we know comparatively little about the strains faced by their spouses. The present study investigates the psychosocial health of transplant patients and their spouses, as well as the link between these groups' physical and psychosocial status, on the one hand, and their degree of burnout and level of life satisfaction on the other. Design: In a cross-sectional study, 121 patients and their spouses are surveyed by questionnaire following heart, lung, liver, or kidney transplant. Methods: The psychosocial parameters investigated in both patients and spouses are sense of coherence, quality of life, quality of the relationship, life satisfaction, and burnout. Results: Patients rate the quality of the relationship higher than their partners do, and they are more satisfied with the relationship than their spouses are ( $p < .001$ ). Regression analyses show that patients' life satisfaction is associated with quality of the relationship. Evidence of a full burnout syndrome can be found in three of the patients and two of the spouses. Burnout in the case of both patients and their partners is associated with limitations in one's own sense of coherence and in one's mental and physical health (multiple  $R^2 = 0.79$  for patients and  $0.76$  for spouses). Conclusion: Because of the importance of the couple's relationship, psychosocial counseling should pay more attention to relationship satisfaction. Psychotherapeutic techniques should be used to improve the sense of coherence in both patient and spouse.

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Life Satisfaction and Burnout among Heart, Lung, Liver and Kidney Transplant Patients and their Spouses

Running head: Life Satisfaction and Burnout after Transplantation

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Abstract

*Objective:* Whilst a number of studies have dealt with the psychosocial consequences of transplantation for patients, we know comparatively little about the strains faced by their spouses. The present study investigates the psychosocial health of transplant patients and their spouses, as well as the link between both groups' physical and psychosocial status on the one hand, and their degree of burnout and level of life satisfaction on the other.

*Design* In a cross-sectional study, 121 patients and their spouses are surveyed by questionnaire after a heart, lung, liver or kidney transplant.

*Methods:* Psychosocial parameters investigated in both patients and spouses are sense of coherence, quality of life, quality of the relationship, life satisfaction, and burnout.

*Results:* Patients rate the quality of the relationship higher than their partners: they are more satisfied with the relationship than their spouses ( $p < .001$ ). Regression analyses show that patients' life satisfaction is associated with quality of the relationship. Evidence of a full burnout syndrome can be found in three of the patients and two of the spouses. Burnout in the case of both patients and their partners is associated with limitations in one's own sense of coherence and in one's mental and physical health (multiple  $R^2 = 0.79$  for patients and 0.76 for spouses).

*Conclusion:* Because of the importance of the couple's relationship, psychosocial counselling should pay more attention to relationship satisfaction. Psychotherapeutic techniques should be used to improve the sense of coherence of both patient and spouse.

*Keywords:* burnout, life satisfaction, spouses, caregiver, transplantation

## Introduction

Previous prospective long-term studies provide evidence that quality of life after a heart, lung, liver or kidney transplant improves significantly and remains stable over a fairly long period of time (Beilby, Moss-Morris & Painter, 2003; Cameron, Whiteside, Katz & Devins, 2000; Goetzmann et al., 2006; Jofre, López-Gómez, Moreno, Sanz-Guajardo & Valderrábano, 1998; Karam et al., 2003; Lindqvist, Carlsson & Sjöden, 2000; Kugler, Strueber, Tegtbur, Niedermeyer & Haverich, 2004; Krasnoff et al., 2005; Littlefield et al., 1996; Pinson et al., 2000). The literature on caregivers of patients suffering from physical and mental illnesses is also relatively extensive: caregivers tend to suffer from depression, report a lower life satisfaction, and are prone to coming down with infections; there are even indications of an increased mortality in this group (Haley, LaMonde, Han, Burton & Schonwetter, 2003; Kiecolt-Glaser, Dura, Speicher, Trask & Glaser, 1991; Schoenmakers, Buntinx & De Lepeleire, 2009; Schulz & Beach, 1999). In the field of transplantation medicine, however, there are few studies on the family caregivers' psychosocial situation which do not focus on the well-being of the patients' spouses: In one study, family members' stress levels before the heart transplant were markedly higher than those of the general population, but decreased to a normal level in the year following the transplant (Canning, Dew & Davidson, 1996). Despite this, however, psychiatric disorders arose cumulatively in 56.3% of family members within three years of the patient's heart transplant (Dew et al., 1998), and the physical state of health of 29% of family members worsened in the first year after the heart transplant (Dew et al., 2004). Furthermore, high levels of stress with symptoms of anxiety and depression were found in family members of lung-transplant patients (Ullrich, Jänsch, Schmidt, Strueber & Niedermeyer, 2004). By contrast, family members of kidney-transplant patients were less depressed and more positive-minded regarding family relationships than the patients themselves (Rossi Ferrario, Zotti, Baroni, Cavagnino & Fornara, 2002). Moreover, caregivers

of kidney- and liver-transplant patients had favourable quality-of-life, life-satisfaction, psychological, and social-intimacy outcomes. Even so, higher caregiving strain was significantly correlated with lower mental quality of life, lower life satisfaction, and more mood disturbance (Rodrigue, Dimitri, Reed, Antonellis, Hanto & Curry, 2011; Rodrigue, Dimitri, Reed, Antonellis, Pavlakis, Johnson & Mandelbrot, 2010). All of the aforementioned studies focus on describing different indices of quality of life in family members / caregivers compared to other groups, or on the development of these indices across a certain time span. To date, however, the correlations between patients' quality-of-life indices such as life satisfaction and burnout, and those of their family members in general and their spouses in particular, have not been investigated sufficiently. This is despite indications that a better quality of life on the part of the patient was associated with a better quality of life for the caregiver (Myaskovsky, Dew, Switzer, McNulty, DiMartini and & McCurry, 2005).

In the current study, we investigated the psychosocial and physical health of both patients and their spouses using a sample of heart, lung, liver and kidney-transplant patients. Our research was based on the vulnerability-stress theory, which states that an individual's vulnerability leads under stress to a psychological crisis or maladjustment. According to this theory, the degree of vulnerability, assessed by certain vulnerability factors, serves as a predictor for the psychological crisis or maladjustment, for example after transplantation. In line with this, previous research shows that certain pre-transplant vulnerability markers are significant predictors for the psychosocial outcome 12 months after organ transplantation (Goetzmann et al., 2007). Patients with high psychosocial vulnerability have a higher risk of post-transplant psychosocial maladjustment owing to poor mental health and low general life satisfaction. Personality-related cognitive beliefs, such as sense of coherence, play a crucial role here. Patients with a good sense of coherence will experience good mental health as one dimension of quality of life after the transplant. Thus, post-transplant mental health may be dependent on the

extent to which patients have understood the transplant procedures, on their ability to invest these procedures with meaning, and on their confidence in being able to deal with the various physical stresses entailed by the operation. With this theoretical background, we considered burnout and life satisfaction as indicators of quality of life, and assumed that the sense of coherence of both patients and spouses as well as the patient's physical health may be determinants of these expressions of quality of life. Of particular interest to us were the correlations between the health of the patients and that of their spouses, especially in terms of life satisfaction or the existence of burnout in either party.

Life satisfaction is a measure of an individual's perceived level of well-being, and therefore represents a subjective indicator for quality of life (Henrich & Herschbach, 2000). By contrast, the existence of a burnout syndrome furnishes indications of a clinically manifest mental exhaustion including depressive and psychosomatic symptoms, which many individuals develop under chronic stress (Burisch, 2006, p. 18). Burnout is a well-known phenomenon among the caregivers of chronically ill people, for example among the relatives of dementia sufferers (Hubel & Hubbell, 2002; Yilmaz, Turan & Gundogar, 2009). Because of the paucity of research on burnout in transplantation medicine, we decided to investigate this particular psychosocial syndrome rather than, for example, the better-known clinical symptoms of depression.

The *research questions of the study* were as follows:

- 1) Do patients and their spouses differ from one another in terms of their sense of coherence, quality of life, assessment of the relationship, life satisfaction, and burnout? Is there a correlation between the psychosocial variables of the patients and their spouses?
- 2) Are there associations between patients' life satisfaction and burnout and spouses' psychosocial and physical variables when controlling for the patients' psychosocial and physical variables, and vice versa?

## Methods

### *Study design and sample*

Patient inclusion criteria for this cross-sectional study were a heart, liver, kidney or lung-transplant operation at the University Hospital Zurich, Switzerland at least six months previously, and sufficient knowledge of the German language. For caregivers, inclusion criteria were being the patient's spouse or living in a domestic partnership with the patient, and sufficient knowledge of the German language. The study was approved by the Zurich Cantonal Ethics Committee.

The patients and their spouses were sent an informational letter, the questionnaire and a written declaration of consent by ordinary post. Afterwards, the study team contacted the patients by phone. If the patients were interested in participating in the study, we agreed on them asking their spouses to take part also. Those patients and spouses who were willing to participate then completed the questionnaires and sent them back by two separate prepaid return envelopes.

A total of 448 patients were contacted by telephone, of whom 387 were actually reached. The telephone conversation revealed 345 patients as having sufficient German-language skills to participate in the study. During the telephone call, 270 patients consented to participate in the study and affirmed that they would discuss joint participation in the study with one of their caregivers. Two-hundred five patients then returned the questionnaire and the statement of informed consent (response rate = 76%). In addition, the caregivers of 179 patients returned the completed questionnaire and the declaration of informed consent under separate cover (response rate = 66%). Of the 179 dyads, 121 were married couples or couples living in a domestic partnership. All couples were heterosexual. Other caregivers (siblings, parents etc.) were not considered, as partners were assumed to be affected to a greater extent in terms of their quality of life by their spouse's (i.e., the patient's) illness than are more-distant family



members. In total, 65 patients (dropout rate = 24%) and 91 caregivers (dropout rate = 34%) who did not send back the questionnaire were classified as true dropouts. In addition, 58 out of 179 dyads were excluded from the analysis because they were not married or did not live in a partnership.

The final sample consisted of 121 University Hospital Zurich patients who had undergone a heart ( $n=19$ ), lung ( $n=42$ ), liver ( $n=29$ ), or kidney ( $n=31$ ) transplant, as well as their heterosexual spouses. Two-thirds of the patients were men ( $n=81$ , 67%). The patients were somewhat older than their spouses (54 years,  $SD=13$ , range 23-79 vs. 52 years,  $SD=14$ , range 21-84). The majority of the couples had children (patients:  $n=88$ , 73%; spouses:  $n=86$ , 71%). Tables 1 and 2 show the diagnoses of the diseases leading to an organ transplant in the case of the patients, as well as further medical data.

**\*\* Tables 1 and 2 about here\*\***

The most frequent disorders leading to the transplant were cardiomyopathy and coronary heart diseases (heart), chronic obstructive pulmonary disease (COPD) and cystic fibrosis (lung); cirrhosis of the liver caused by hepatitis C infection or alcoholic poisoning (liver); and hereditary kidney diseases or diabetic nephropathy (kidney; see Table 1). As can be seen from Table 2, rejection reactions occurred most frequently in lung and heart patients over the previous six months, and lung and liver patients were hospitalised most frequently within this time period.

Eighty-two spouses (68%) had had contact with a doctor over the past year,  $n = 29$  (24%) had suffered from physical ailments in the last 6 months, and  $n = 16$  (13%) had been hospitalised in the last 6 months.

### *Measures*

Socio-demographic background factors were age, sex, and educational level. The *patient's state of health* was recorded by means of the diagnosis of the underlying disease, the type of

organ transplanted, the time since the transplant surgery and the physical course after transplantation (rejection reactions, hospitalisations over the previous six months). These data were recorded in the University Hospital Zurich's electronic case history. The *spouse's state of health* was covered by the question as to the number of physical ailments and visits to the doctor/hospitalisations over the previous six months. The following questionnaires for patients and their spouses, the German versions of which were validated, were used in the study:

#### *Sense of Coherence*

The Sense of Coherence Scale, Short Version (SOC-13) is a 13-item comprehensive short version of the SOC with a 7-point Likert-type scale (Antonowsky, 1987). The scale measures the individual's cognitive potential relative to three components: comprehensibility, manageability, and meaningfulness. The German-language version of SOC-13 is well validated (Abel & Kohlmann, 2002; Schumacher et al, 2000; Singer & Brähler, 2007). A mean score is computed over the 13 items, ranging from 1 (lowest SOC) to 7 (highest SOC). The norm value is 5.01 (female 4.96, male 5.08), Cronbach's alpha = 0.85. Norm values are means from a representative survey of the German population ( $N = 1,944$ ).

#### *Quality of Life*

The SF-36 Health Survey (Ware, 1997) is used in its validated German version (Bullinger & Kirchberger, 1998) as a questionnaire for measuring the overall quality of life in patients who are physically ill. It comprises a total of 36 items in eight subscales (physical functioning, role physical, bodily pain, general health, vitality, social functioning, role emotional, mental health) consisting of 2-10 items each with 2-point to 10-point Likert-type scales. Cronbach's alpha of the subscales ranges from 0.74 (social functioning) to 0.94 (physical functioning). The subscales are combined into two weighted summary measures (T-scores) on physical health (Physical Component Score or PCS) and on mental health (Mental Component Score or MCS). Higher values indicate better health and quality of life. The norm value for PCS is 50.2 (female

49.1, male 51.4), range 5 – 69. The norm value for MCS is 51.5 (female 50.7, male 52.4), range 12 – 73. All norm values are means from a representative survey of the German population ( $N = 2,773$ ).

#### *Quality of Relationship*

The quality of the relationship between patient and caregiver is assessed by means of the Relationship Assessment Scale (RAS) (Hendrick, Dicke & Hendrick, 1998; Sander & Böcker, 1993). The RAS contains seven items (5-point Likert scale, agreement: 1 = not at all, 5 = perfectly) on quality of relationship: general satisfaction, how well the spouse meets one's needs, how well the relationship compares to others, regrets about the relationship, how well one's expectations have been met, love for spouse, and problems in the relationship. A mean score is calculated across the seven items, ranging from 1 to 5. Higher values indicate a greater satisfaction with the relationship. Cronbach's alpha is 0.93. The RAS shows moderate to high correlations with measures of marital satisfaction (Hendrick et al., 1998). Norm values are not available.

#### *Life Satisfaction*

The Questions on Life Satisfaction FLZ survey (Daig, Herschbach, Lehmann, Knoll & Decker, 2009; Henrich & Herschbach, 2000) assesses satisfaction in eight spheres of life (friends/acquaintances, leisure/hobbies, health, income/financial security, occupation/work, housing/living conditions, family life/children, and relationship with partner/sexuality) on a 5-point Likert scale measure (1 = dissatisfied, 5 = very satisfied). A mean score is computed over the eight aspects, ranging from 1 (lowest satisfaction with life) to 5 (highest satisfaction with life). The norm value is 3.78 (female 3.80, male 3.75), Cronbach's alpha = 0.85. Norm values are means from a representative survey of the German population ( $N = 5,036$ ).

#### *Burnout*

The Burnout Measure Scale (BM, previously known as the Tedium Measure) gauges the degree of burnout by means of a 21-item set answered on a 7-point Likert scale in terms of the

respondent's agreement (1 = never, 7 = always) (Pines, Aronson & Kafry, 1981). The German version of the questionnaire is validated (Enzmann & Kleiber, 1989; Enzmann et al, 1998). A mean score is computed over the 21 items ranging from 1 to 7, with higher values indicating greater burnout; Cronbach's alpha is 0.93. Values between 2 and 3 indicate a good state of well-being, with the cut-off value for an acute crisis being 5. The Burnout Measure Scale correlates highly with fatigue and with the 'emotional exhaustion' dimension of the Maslach Burnout Inventory (Enzmann et al, 1998). Norm values are not available.

### *Statistics*

All analyses were conducted within the framework of a correlational approach using computer software SPSS for Windows, Release 15 (SPSS Inc., Chicago, IL, USA). Descriptive statistics were given in terms of means and standard deviations on the one hand, and counts and percentages on the other. Differences between patients and spouses were investigated with paired *t*-tests, and differences from norm values (hereinafter referred to as 'control samples') with *z*-tests. Pearson correlations were computed to describe the associations between patients and their spouses. The patient/caregiver (spouse) model is based on a regression model developed in accordance with Campbell & Kashy (2002) as well as Kenny, Kashy & Cook (2006). Hierarchical regression analyses were conducted in order to predict patient satisfaction with life as well as burnout. Physical and mental health, sense of coherence, assessment of relationship, and gender of spouse were included in a first model. The corresponding patient data (physical and mental health, sense of coherence, assessment of relationship) were also included in a second model. In a third model, we included interaction terms for dyadic data (i.e. physical and mental health interactions between patient and spouse). The same procedure was applied *mutatis mutandis* for spouse's satisfaction with life and burnout. We reported beta weights and their significance, adjusted *R*-square, and change values in *R*-square. *P*-values of less than 0.05 were considered to be significant.

## Results

### *Psychosocial variables of the patients and their spouses*

In a first step, we tested whether patients and their spouses differed in terms of sense of coherence (SOC-13), mental health, and physical health as assessed by the SF-36, quality of relationship (RAS), life satisfaction (FLZ) and burnout (BM). We also examined whether differences emerged between patients, spouses and the norm values, the latter of which were only available in SOC-13, SF-36, and FLZ (see Table 3).

**\*\*Table 3 about here\*\***

Table 3 shows that there is no difference between patients and caregivers in terms of sense of coherence. Both groups report higher values than the control sample. With regard to mental health, there are no differences between patients and their spouses. Whilst spouses do not differ from the control sample (norm value), patients show lower values than the latter. By contrast, there are significant differences in physical health: whereas patients report lower values than both their spouses and the control sample (norm value), spouses feel significantly physically better than the control sample (norm value). There are also differences in terms of appraisal of the quality of the relationship: Patients rate the quality of their relationship significantly higher than do their spouses.

In terms of life satisfaction, there are no differences between patients and their spouses. Both groups are more satisfied than the corresponding control sample (norm value). In terms of burnout, patients report higher burnout values than their spouses. With a cut-off value of 5, which points to an acute crisis,  $n = 3$  of the patients and  $n = 2$  of the spouses have a clinically manifest burnout syndrome.

### *Correlations between the psychosocial variables of the patients and their spouses*

The highest correlation between patients and spouses was found in the rating of the quality of the relationship ( $r = 0.51$ ), followed by life satisfaction ( $r = 0.34$ ), sense of coherence ( $r =$

0.30), burnout ( $r = 0.28$ ), physical health ( $r = 0.26$ ) and mental health ( $r = 0.25$ ). All these correlations were significant, with  $p < .01$ .

*Associations between psychosocial / physical variables and life satisfaction or burnout of patients and their spouses*

In the regression analyses, we examined the associations between psychosocial and physical predictors and life satisfaction or burnout of both the patients and their spouses. Sense of coherence, mental health, physical health and quality of the relationship were chosen as predictors. Gender served as the only control variable, since age, organ transplant (heart, lung, liver, kidney), time since transplant, age at time of transplant and rejections in the last 6 months were neither correlated with any of the outcomes nor any of the predictors. Results of the regression analyses are displayed in Tables 4 and 5.

**\*\*insert Tables 4 and 5 about here\*\***

The physical and psychosocial predictors of the spouse (S) have no significant association with the life satisfaction of the patient (P) (model 1; see Table 4). If in addition we examine the physical and psychosocial predictors of the patient (P) (model 2), we find a significant association between patients' rating of quality of the relationship and their life satisfaction.

The outcome variable of patient burnout (P) is significantly associated with both gender and quality of relationship with the spouse (S) (model 1). If in addition we examine the physical and psychosocial predictors of the patient (P) (model 2), we see that all of these with the exception of relationship quality are significantly associated with burnout in the patient (P). Compared to model 1, only gender of spouse is still significantly associated with patient burnout, i.e. patients are more likely to develop burnout symptoms if the spouse is male.

From Table 5 it may be deduced that neither the patient's predictors (P) nor those of the spouse (S) are associated with the spouse's life satisfaction (S). Burnout in the spouse (S) is significantly associated with patient's gender (P) and patient's rating of quality of the

relationship (model 1). If in addition we examine the physical and psychosocial predictors of the spouse (S) (model 2), we find that all of these are significantly associated with burnout in the spouse (S). Compared to model 1, none of the patient's variables is still significantly associated with spouse's burnout.

In additional analyses, interactions between patients' and spouses' psychosocial variables were tested. As no significant interaction effects emerged, results are not reported.

### Discussion

This study focused on different indicators of quality of life and life satisfaction among spouses of patients who had undergone transplant surgery, and the relationship between these indicators reported by spouses and patients. The study results indicate a fairly high quality of life and life satisfaction among spouses of transplant patients. This seems to contradict findings presented in previous research papers (Rodrigue et al., 2010, Rodrigue et al., 2011; Rossi Ferrario et al., 2002). Spouses feel physically better and suffer less from burnout than patients. The incidence of a manifest clinical burnout syndrome is surprisingly low: a recent epidemiological study from Finland, for example, noted a mild burnout in 25% and a severe burnout in 2.4% of the working population (Ahola et al., 2008). Despite these obviously contradictory findings, however, other studies report that caregivers of transplant patients are less stressed than those of other chronically ill patients, for example dementia patients (cf. Haley et al., 2003; Kiecolt-Glaser et al., 1991; Schoenmakers et al., 2009; Schulz & Beach, 1999). An explanation for this difference among different types of caregivers might be that in general, and despite all the stressful events accompanying the surgery, an organ transplant represents a positive life event leading to a significant increase in quality of life for both patient and caregiver. This may also explain the present findings of low rates of burnout, high life satisfaction and high quality of life, particularly among the caregivers (Beilby et al. 2003; Goetzmann et al., 2006; Jofre et al., 1998; Karam et al., 2003; Krasnoff et al., 2005; Kugler et

al. 2004; Lindqvist et al., 2000; Littlefield et al., 1996; Pinson et al., 2000). As mentioned in the limitations section, there may be a slight bias owing to the relatively low response rate, and the fact that only outpatients and their caregivers were invited to participate in this study, as opposed to patients hospitalised at the time of the study. It is possible that the hospitalised patients and their spouses would have reported a higher degree of burnout and lower life satisfaction.

Moreover, patients rated the quality of their relationship higher than did their spouses. Obviously, for transplant patients faced with physical problems and stress due to their illness, the social embedding in the relationship is of great importance. What's more, this finding can be explained by equity theory (Walster, Walster & Berscheid, 1978), which posits that individuals experiencing unbalanced exchanges in their relationship (i.e., under- or overbenefiting) report lower satisfaction with the relationship. Of course, the feeling of being underbenefited is more detrimental to relationship quality than the feeling of being overbenefited (Guerrero, La Valley & Farinelli 2008). In couples facing the serious illness of one partner, equity changes to the effect that patients are more likely to feel overbenefited whilst spouses are more likely to feel underbenefited (Thompson & Pitts, 1993). This might explain the differences in perceived relationship quality between patients and their partners.

The comparison with the norm values from a representative survey of the German population shows that both patients and their spouses possess distinct personal resources (sense of coherence), and are more satisfied with life than the general population. The key to understanding these results might lie in the fact that the physical health of transplant patients is experienced as rather limited; however, patients probably apply an intra-individual comparison, comparing their health status not with the general 'healthy' population, but with their own previous experience of serious illness. This may lead to an activation of the sense of coherence in both patients and spouses, in order to cope effectively with the stresses arising from the patient's illness. One might envisage the health problem as a catalyst activating



personal resources, which in turn creates a new psychological balance. Due to a lack of norm values for burnout and quality of relationship, comparisons for these constructs are not possible.

In our comprehensive regression analyses, we not only examined the associations between predictor and outcome variables separately for patients and spouses, but also applied a dyadic approach. Such dyadic effects are observable in the case of burnout: the spouse being male and a negative appraisal of the quality of the relationship go hand in hand with more burnout symptoms in the patient. When controlling for patient-reported sense of coherence, mental and physical health, and quality of relationship, the gender of the spouse remains the only significant partner effect. The importance of the spouse's rating of the quality of the relationship decreases substantially when the patient's personal risk factors for developing a burnout are controlled for. In other words, although the spouse might play an important role in the development of a burnout syndrome, the patient's own personal risk factors, such as lower sense of coherence, appear to carry more weight. Objective physical factors such as organ type, rejection or time since transplantation do not play a role in terms of the outcome parameters of the patients or their spouses.

Thus, the dyadic combination of female patient / male spouse might constitute a risk factor for the development of burnout in the patient. In principle, the dyadic combination of male patient / female partner might also constitute a risk factor for a burnout in the partner: however, this significant association disappears as soon as the spouse-specific variables are taken into account. In summary, it can be said that it is primarily the individual's own state of mind or coping ability that is associated with the development of a burnout syndrome in both patients and spouses. Comparable findings are known from the previous literature on caregivers. Haley et al. (2003), for example, discovered that the caregiver's depression or life satisfaction was not associated with the state of health of dementia or lung-cancer patients, but with personal psychosocial and socio-demographic traits. Unlike burnout, the life satisfaction

of both patients and spouses appears to be independent of the patients' own mental and physical health, as well as that of their spouses. The only significant association with life satisfaction that emerged was the patients' rating of the quality of the relationship: the higher this rating, the higher the life satisfaction of the patient. These findings once again emphasise the importance of the quality of the relationship for the transplant patient.

Some limitations of the study must also be addressed. The response rate for the questionnaires, which were completed by both patients and spouses, was relatively low. From the sample of 387 patients contacted by telephone, we managed to obtain 179 patient/caregiver dyads, of which 121 were patient/spouse dyads. The explanation for the low response rate lies in the dyadic design of the study, according to which both patients and spouses had to fill out a questionnaire. It is further possible that couples who were doing relatively well physically, mentally and in their relationship were more likely to agree to take part in this sample. As mentioned above, because we initially contacted patients by telephone, only those individuals who were being treated as outpatients and whose physical health was therefore comparatively stable were included in the present study. Moreover, we did not control for whether patients or caregivers were receiving psychosocial care at the time of the study assessment, a factor which might have contributed to the relatively positive results of our study. Of course, it should be borne in mind that the sample was heterogeneous, in that the transplant patients belonged to different organ groups. Life-threatening experiences and physical limitations potentially vary greatly between different organ groups. Moreover, not only different organ groups but also different diagnoses within an individual organ group can potentially influence life satisfaction or degree of burnout. Given that we found no differences between the different groups in terms of either factor, this seems to be fairly unlikely. We therefore assume that the heterogeneity of the sample may not be a major limitation of this study. A final limitation lies in the cross-sectional nature of the study, which does not permit any statements on causality, but merely on associations between the variables.

### *Conclusions*

The results of this study indicate that spouses of transplant patients generally seem to be in good mental and physical health. For the patients, quality of relationship with the spouse is of prime importance as long as personal variables are not taken into account. It is noteworthy that neither life satisfaction nor burnout of the spouse is associated with the physical or mental health of the patient. Psychosocial counselling should encourage both transplant patients and their spouses to develop their personal coping potential. In addition, attention should be paid to satisfaction with the couple's relationship, which seems to be an important resource for transplant patients. Spouses should be shown sufficient appreciation for their services to the patient, and be supported in the resolution of possible relationship conflicts.

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Table 1

*Diagnoses of the Transplant Patients (n = 121)*

Heart (n = 19)	n	Lung (n = 42)	n	Liver (n = 29)	n	Kidney (n = 31)	n
Cardiomyopathy	9	Cystic fibrosis	12	Cirrhosis of the liver (due to hepatitis C)	9	Hereditary kidney diseases	8
Coronary artery disease	8	Chronic obstructive pulmonary disease	9	Post-alcoholic cirrhosis	6	Diabetic nephropathy	7
Congenital vitia	2	Pulmonary fibrosis	5	Primary biliary cirrhosis	3	Kidney dysplasia / aplasia	3
		Other	16	Other	11	Other	13

Table 2

*Medical Data of the Patients (n = 121)*

	Transplant			
	Heart	Lung	Liver	Kidney
	(n = 19) n (%)	(n = 42) n (%)	(n = 29) n (%)	(n = 31) n (%)
Rejections in the last 6 months (yes)*	6 (32)	11 (26)	1 (3)	3 (10)
Hospitalisations in the last 6 months (yes)*	2 (11)	16 (38)	11 (38)	6 (19)
Age in years at date of transplantation; <i>M</i> ( <i>SD</i> , range)	50 (13, 21-72)	45 (14, 20-68)	52 (13, 18-69)	54 (11, 26-74)
Time in months since date of transplantation; <i>M</i> ( <i>SD</i> , range)	118 (73, 12-223)	66 (46, 7-191)	33 (18, 7-75)	43 (20, 10-75)

Table 3

*Means and Standard Deviations (SD), and t-Tests for differences between patients and spouses and patients, spouses and norm values of core variables of this study*

	Patient <i>M (SD)</i>	Spouse <i>M (SD)</i>	95%CI for mean difference	<i>p</i> patient spouse	Norm value	<i>p</i> patient norm	<i>p</i> spouse norm
SOC	5.17 (0.77)	5.29 (0.84)	-0.30; 0.05	.154	5.01	.011	<.001
Mental Health	46.23 (12.62)	48.45 (11.39)	-5.03; 0.42	.097	50.2	.001	.143
Physical Health	43.97 (10.34)	53.05 (8.05)	-11.37; - 7.23	<.001	51.5	<.001	<.001
RAS	4.35 (0.58)	4.11 (0.70)	.13; 0.36	<.001	Not available	-	-
Life Satisfaction	3.86 (0.45)	3.88 (0.44)	-0.14; 0.09	.648	3.78	.033	.009
Burnout	2.87 (0.91)	2.66 (0.88)	0.01; 0.40	.045	Norm values not available, Cutoff = 5	-	-

*Note. SOC = sense of coherence; RAS = relationship quality*

Table 4

*Hierarchical Regression Analysis for life satisfaction and burnout of the patients (P).*

	Life Satisfaction FLZ (patient)		Burnout BM (patient)	
	Model 1	Model 2	Model 1	Model 2
Predictors (spouse)	<i>b</i> (SE <i>b</i> ) Beta (95%CI)	<i>b</i> (SE <i>b</i> ) Beta (95%CI)	<i>b</i> (SE <i>b</i> ) Beta (95%CI)	<i>b</i> (SE <i>b</i> ) Beta (95%CI)
Gender (S) (male)	0.06 (0.08) 0.05 (-0.15;0.25)	0.05 (0.07) 0.04 (-0.15;0.23)	0.24 (0.19) 0.20 (0.01;0.39)*	0.14 (0.10) 0.10 (0.01;0.19)*
Sense of Coherence SOC-13 (S)	0.08 (0.07) 0.16 (-0.09;0.41)	0.09 (0.07) 0.17 (-0.09;0.43)	-0.18 (0.14) -0.18 (-0.43;0.07)	0.06 (0.07) 0.04 (-0.09;0.17)
Mental Health MCS SF-36 (S)	0.00 (0.01) -0.05 (-0.30;0.20)	0.00 (0.01) -0.07 (-0.31;0.17)	0.00 (0.01) 0.03 (-0.21;0.27)	0.00 (0.01) 0.04 (-0.08;0.16)
Physical Health PCS SF-36 (S)	0.01 (0.01) 0.13 (-0.06;0.32)	0.01 (0.01) 0.14 (-0.05;0.33)	-0.02 (0.01) -0.18 (-0.38;0.00)	0.00 (0.01) 0.02 (-0.08;0.12)
Quality of Relationship RAS (S)	0.09 (0.08) 0.15 (-0.08;0.38)	-0.01 (0.08) -0.01 (-0.25;0.23)	-0.34 (0.15) -0.28 (-0.50;-0.06)*	-0.13 (0.08) -0.11 (-0.23;0.01)
Predictors (patient)				
Sense of Coherence SOC-13 (P)	Not included	-0.06 (0.07) -0.11 (-0.34;0.12)	Not included	-0.31 (0.07) -0.24 (-0.36;-0.12)***
Mental Health MCS SF-36 (P)	Not included	0.01 (0.01) 0.16 (-0.07;0.39)	Not included	-0.04 (0.01) -0.58 (-0.69;-0.47)***
Physical Health PCS SF-36 (P)	Not included	0.00 (0.01) 0.02 (-0.17;0.021)	Not included	-0.03 (0.01) -0.35 (-0.44;-0.26)***
Quality of Relationship RAS (P)	Not included	0.23 (0.09) 0.29 (0.08;0.50)**	Not included	-0.14 (0.09) -0.09 (-0.19;0.01)
	Adjusted $R^2 = 0.06$ ; $F(5,107)=2.74$ , $p=.032$	Adjusted $R^2 = 0.11$ ; $F(9,103)=2.67$ , $p=.008$	Adjusted $R^2 = 0.14$ ; $F(5,108)=3.98$ , $p=0.002$	Adjusted $R^2 = 0.79$ ; $F(9,104)=45.95$ , $p<.001$
	$R^2$ change (model 1 – model 2) = 0.08*		$R^2$ change (model 1 – model 2) = 0.63***	

Notes. \*\*\*  $p < .001$ , \*\*  $p \leq .01$ , \*  $p \leq .05$

Table 5

*Hierarchical Regression Analysis for life satisfaction and burnout of the spouses (S).*

	Life Satisfaction FLZ (spouse)		Burnout BM (spouse)	
	Model 1	Model 2	Model 1	Model 2
Predictors (patient)	<i>b</i> (SE <i>b</i> ) Beta (95%CI)	<i>b</i> (SE <i>b</i> ) Beta (95%CI)	<i>b</i> (SE <i>b</i> ) Beta (95%CI)	<i>b</i> (SE <i>b</i> ) Beta (95%CI)
Gender (P) (male)	0.06 (0.09) 0.06 (-0.13;0.25)	0.10 (0.10) 0.10 (-0.10;0.30)	0.39 (0.16) 0.21 (0.04;0.38)*	0.06 (0.10) 0.03 (-0.07;0.13)
Sense of Coherence SOC-13 (P)	0.06 (0.07) 0.11 (-0.13;0.35)	0.06 (0.07) 0.10 (-0.15;0.35)	-0.24 (0.12) -0.21 (-0.42;0.00)	0.00 (0.07) -0.01 (-0.13;0.11)
Mental Health MCS SF-36 (P)	0.00 (0.01) -0.08 (-0.32;0.16)	0.00 (0.01) -0.09 (-0.33;0.15)	0.00 (0.01) 0.01 (-0.20;0.22)	0.00 (0.01) 0.02 (-0.10;0.14)
Physical Health PCS SF-36 (P)	0.00 (0.01) 0.01 (-0.18;0.20)	0.00 (0.01) 0.02 (-0.18;0.22)	-0.01 (0.01) -0.16 (-0.33;0.01)	-0.01 (0.01) -0.07 (-0.17;0.03)
Quality of Relationship RAS (P)	-0.09 (0.08) -0.12 (-0.33;0.09)	-0.14 (0.09) -0.18 (-0.41;0.05)	-0.35 (0.14) -0.23 (-0.41;-0.05)*	-0.05 (0.09) -0.04 (-0.15;0.07)
Predictors (spouse)				
Sense of Coherence SOC-13 (S)	Not included	0.06 (0.07) 0.11 (-0.17;0.39)	Not included	-0.32 (0.07) -0.31 (-0.44;-0.18)***
Mental Health MCS SF-36 (S)	Not included	0.00 (0.01) -0.06 (-0.32;0.20)	Not included	-0.04 (0.01) -0.53 (-0.66;-0.40)***
Physical Health PCS SF-36 (S)	Not included	-0.01 (0.01) -0.12 (-0.33;0.09)	Not included	-0.02 (0.01) -0.16 (-0.26;-0.06)**
Quality of Relationship RAS (S)	Not included	0.10 (0.08) 0.16 (-0.10;0.42)	Not included	-0.18 (0.08) -0.14 (-0.27;-0.01)*
	Adjusted $R^2 = 0.03$ ; $F(5,107)=0.56$ , $p=0.729$	Adjusted $R^2 = 0.06$ ; $F(9,103)=0.76$ , $p=.651$	Adjusted $R^2 = 0.20$ ; $F(5,108)=6.71$ , $p<.001$	Adjusted $R^2 = 0.76$ ; $F(9,104)=40.96$ , $p<.001$
	$R^2$ change (model 1 to model 2) = 0.04		$R^2$ change (model 1 to model 2) = 0.54***	

Notes \*\*\*  $p < .001$ , \*\*  $p \leq .01$ , \*  $p \leq .05$